

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (currently amended) A method for copying data in a memory device system having a plurality of memory diskarray apparatus comprising m + n disk devices as partitioned into a first group of n memory disk devices and a second group of m memory disk devices, said method including the steps of:

reading data of m-1 units from said first group of n disk devices from said n memory devices data with a length required for preparation of redundant data;

forming redundant data based on the data of m-1 units read from said first group of n disk devices from the read data; and

storing each data of m-1 units and said redundant data in any one of said m disk devices of said second group,

wherein n and m are different integers said read data and said redundant data in said m memory devices.

2. (currently amended) The A method for copying data according to claim 1 wherein the unit is a predetermined data length at said step of storing, only part of said read data is stored in said m memory devices.

3. (currently amended) A method for copying data in a diskarray apparatus coupled to a computer, said diskarray apparatus comprising m + n disk devices partitioned into a first group of n disk devices and a second group of m disk devices, m and n being different integers memory device system being connected to external apparatus and having a plurality of memory devices as partitioned into n memory devices and m memory devices, said method including the steps of:

duplexing and storing data as sent from said external apparatus in said n memory devices and said m memory devices;

storing data received from said computer in both of said n disk devices of said first group and said m disk devices of said second group for maintaining duplicated data;
halting duplex of duplicating data based on an instruction from said external apparatus computer;

storing the data as sent received from said external apparatus computer, during interruption of data duplex duplicating, in n disk devices of said first group while recording location information of stored data said n memory devices while recording information as to a storage location;

restarting data duplex duplicating based on an instruction from said external apparatus computer;

reading data of m-1 units from said first group of n disk devices out of said n memory devices in units of m-1 items;

forming redundant data based on the data of m-1 units read from said first group of n disk devices from the data of m-1 unit; and

storing certain data of m-1 units as designated by the recorded location information and said redundant data in said m disk devices of said second group in said m memory devices certain data of said data of m-1 unit as designated by the recorded information along with said redundant data.

4. (currently amended) A memory device system including diskarray apparatus comprising:

a plurality of memory n + m disk devices as partitioned into n memory disk devices and m memory disk devices, n and m being different integers;

a controller for control of said plurality of memory devices;

an n control means for controlling said n memory disk devices; and

an m control means for controlling of said m memory disk devices,

wherein when copying data from said n memory disk devices to said m memory disk devices, said n control means reads data of m-1 units from said n memory disk devices, said m control means forms redundant data based on the data of m-1 units read from said n disk

devices, data to thereby store any one of said and said m control means stores each data of m-1 units read data and said redundant data in any one of said m memory disk devices.

5. (currently amended) The system diskarray apparatus according to claim 4 wherein said unit is a predetermined data length with a logical block address as a reference.

6. (currently amended) The system diskarray apparatus according to claim 4 further including comprising:

an interface connected to a computer external apparatus;

duplex means for storing data received from said computer in both of said n disk devices and said m disk devices duplexing and storing data in said n memory devices and said m memory devices;

means for interrupting said duplex means in accordance with an instruction from said computer external apparatus; and

update management means for recording location information indicating location in said n disk devices to which data received from said computer is stored as to a location whereat data being input from said interface is to be stored in said n memory devices during interruption of said duplex means,

wherein said m control means stores certain data designated by said location information in said m disk devices, when said duplex means restarts data duplicating in accordance with an instruction from said computer any one of said m-1 unit read data in any one of said m memory devices on the basis of information as stored in said update management means.

7. (currently amended) A diskarray apparatus comprising memory device system including:

a plurality of memory n + m disk devices as partitioned into a first group of n disk devices and a second group of m disk devices, n and m being different integers n-memory devices and m memory devices; and

a controller coupled to said n + m disk devices for control of said plurality of memory devices;

n control means for controlling said n memory devices;

Amdt. dated 4/15/2004]

Reply to Office Action of December 18, 2003

~~m control means for controlling said m memory devices; and
data duplex means for duplexing and storing data in said n memory devices and
said m memory devices~~

wherein data of n-1 units and redundant data generated from said data of n-1 units
are stored in said first group of n disk devices, data of m-1 units and redundant data generated
from said data of m-1 units are stored in said second group of m disk devices, and n and m are
different integers, and

wherein said controller reads data from said first group of n disk devices,
generates new redundant data to be stored in said m disk devices corresponding to the read data,
and stores the read data and the new redundant data into said second group of m disk devices.

8. (currently amended) The system diskarray apparatus according to claim 7
wherein said controller reads data of m-1 units from said first group of n disk devices, generates
said new redundant data based on the read data of m-1 units, and stores each data of m-1 units
and said redundant data in any one of said m disk devices of said second group n and m are
different integers.

9. (currently amended) A computer system comprising:
a first memory device diskarray system with comprising n memory disk devices;
and

a second memory device diskarray system being connected coupled to said first
memory device diskarray system, said second diskarray system comprising m disk and having m
memory devices,

wherein n and m are different integers;

wherein said first diskarray system comprises means for reading data of m-1 units
out of said n disk devices, and means for transferring the read data to said second diskarray
system said first memory device system includes means for reading data of m-1 unit out of said n
memory devices; and

wherein said second memory device diskarray system includes formation
comprises means for forming redundant data based on the m-1 units data as read by received

Amdt. dated 4/15/2004]

Reply to Office Action of December 18, 2003

from said first memory device diskarray system, and means for storing said redundant data as formed by said formation means and said m-1 units read data in said m memory disk devices.

10. (currently amended) A computer diskarray system comprising:

n + m disk devices;

a computer processor; and

a memory storing programs executed by said processor; device system having a plurality of storage media, wherein

said memory device system includes:

a mirror primary LU in n disk devices wherein, in said mirror primary LU, data of n-1 units and redundant data generated from said data of n-1 units are stored in said n disk devices;

a mirror secondary LU in m disk devices wherein, in said mirror secondary LU, data of m-1 units and redundant data generated from said data of m-1 units are stored in said m disk devices;

an n-RAID control subprogram stored in said memory for performing RAID control of the mirror primary LU;

an m-RAID control subprogram stored in said memory for performing RAID control of the mirror secondary LU;

an LU mirror subprogram stored in said memory for writing data received from a computer for duplex purposes said data into said mirror primary LU and said mirror secondary LU for maintaining duplicated data in said mirror primary LU and said mirror secondary LU when said computer issues a data write request;

a non-mirror event update monitor subprogram stored in said memory for monitoring data update with respect to said mirror primary LU upon interruption of duplicating data between duplexing of said mirror primary LU and said mirror secondary LU;

a non-mirror event update position management subprogram stored in said memory for recording an update position of said data update with respect to said mirror primary LU; and

a mirror resynchronous subprogram stored in said memory for copying data designated by of the recorded update position from said mirror primary LU to said mirror secondary LU, ~~to thereby establish content coincidence, and said mirror primary LU and said mirror secondary LU are different from each other in arrangement of redundant array of inexpensive disks ("RAID")~~

wherein n and m are different integers.

11. (canceled)

12. (currently amended) The computer diskarray system according to claim 10,

wherein when said mirror resynchronous subprogram is executed, said n-RAID control subprogram reads data from said mirror primary LU, the read data is included in a same stripe of said mirror secondary LU as data copied by said mirror resynchronous subprogram, executes processing for establishing content coincidence by copying the data of said recorded update position from said mirror primary LU to said mirror secondary LU and

wherein said m-RAID control subprogram generates new redundant data based on the data read by said n-RAID control subprogram and the data copied by said mirror resynchronous subprogram and stores the new redundant data and the data copied by said mirror resynchronous subprogram in said mirror secondary LU performs processing of reading data out of said mirror primary LU to thereby permit assortment of data of a stripe array of said mirror secondary LU including the data of said recorded updated position.

13. (currently amended) A computer diskarray system comprising:
a computer first diskarray system comprising n disk devices; and
a first memory device system and a second memory device diskarray system
comprising m disk devices each having a plurality of storage media,

wherein said first memory device diskarray system comprises includes:

a mirror primary LU in said n disk devices wherein, in said mirror primary LU, data of n-1 units and redundant data generated based on said data of n-1 units are stored;

an n-RAID control subprogram for performing RAID control of said mirror primary LU;

an LU mirror subprogram for writing data received from a computer for duplex purposes said data into said mirror primary LU and sending said data to said second diskarray system a mirror secondary LU when said computer issues a data write request;

a non-mirror update monitor subprogram for monitoring data update with respect to said mirror primary LU during interruption of duplicating data between said first diskarray system and said second diskarray system duplex of said mirror primary LU and said mirror secondary LU;

a non-mirror event update position management subprogram for recording an update position of said data update with respect to said mirror primary LU; and

a mirror resynchronous subprogram for copying data designated by of said recorded update position from said mirror primary LU to said second diskarray system mirror secondary LU to thereby permit establishment of content coincidence; and

a command issuance subprogram for issuing a command for execution of data transfer relative to the second external memory device; and

wherein said second memory device diskarray system comprises includes:

a mirror secondary LU in said m disk devices wherein, in said mirror secondary LU, data of m-1 units and redundant data generated based on said data of m-1 units are stored; and

an m-RAID control subprogram for performing RAID control of said mirror secondary LU, and said m-RAID control subprogram generates redundant data corresponding to data received from said first diskarray system, and stores said redundant data and said data received from said first diskarray system into said mirror secondary LU,

wherein said n and m are different integers mirror primary LU and said mirror secondary LU are different in RAID level from each other.

14. (currently amended) The computer system according to claim 13 wherein said mirror primary LU is formed of nD+1P whereas and said mirror secondary LU have different levels of RAID configuration is made up of mD+1P, and wherein m and n are integers of more than or equal to two and are different in value from each other.